



35 Minutes

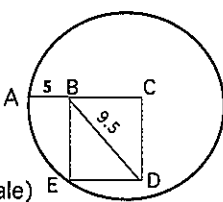
October 13, 2011

AMERICAN SCHOLASTIC MATHEMATICS ASSOCIATION
JR/INTER SCHOOL DIVISION
CONTEST #1

NAME _____ SCHOOL _____

QUESTIONS

ANSWERS

1. Eight and only eight students are taking both science and history. This number represents only 10% of all students taking science and 16% of all students taking history. How many students are taking at least one of the two courses?	1.
2. Mark, who is on a basketball team, is 0.25 meter taller than Ned who is not the shortest team member. Ned is 0.16 meter shorter than Keith, another team member. Alexa, the star center on the basketball team, is 0.55 meter taller than Lori, the shortest person on the team. If Lori is 1.46 meters tall and 0.38 meter shorter than Mark, how tall is Keith?	2.
3. Yancy and Zeke, two gamblers, played a series of games. The first was played for \$1, the second for \$2, and so on. The stakes were doubled in each successive game. After 8 games, Yancy had won \$31 more than Zeke. If no games were tied, find which games were won by Yancy. Write the ordinal numbers (e.g. first, second) of the games Yancy won.	3.
4. A farmer bought a certain number of chickens which cost \$9 each. The total on the receipt was \$18C43. (The digit where the C is, was unreadable on the receipt.) What value does C have? How many chickens were bought? (Both answers required.)	4.
5. John has only white mice and parakeets as pets. His pets have a total of 15 heads and 50 legs. How many parakeets does he have? (Mice have four legs and one head, parakeets have two legs and one head.)	5.
6. Half the people in a room left. One third of those remaining started to dance. There were then 12 people who were not dancing. What was the original number of people in the room?	6.
7. Given the circle with center C and the rectangle BCDE, find the measure of the length of the diameter of the circle C.  (not drawn to scale)	7.

ADVISER : Transfer a "1" for each correct answer and a "0" for each incorrect answer to the return scorecard. Mail results within 5 days of the contest date. Please make up any missed contests and mail the results.



35 Minutes

November 10, 2011

AMERICAN SCHOLASTIC MATHEMATICS ASSOCIATION
JR/INTER SCHOOL DIVISION
CONTEST #2

NAME _____ SCHOOL _____

QUESTIONS

ANSWERS

1. A five-digit number is such that if the digit 1 is added to its end, the new number is three times as large as it would be if 1 were added to the original number's beginning. What is the original number?	1.
2. I am charging 15 cents for each pencil. I have sold $\frac{2}{3}$ of my pencils and have exactly 8 pencils left. How much money in dollars will I have collected from the sale of my pencils after I have sold all my pencils?	2.
3. The measures of the angles of a triangle are in the ratio 2:3:5. What is the measure, in degrees, of the smallest angle?	3.
4. Climbing the giant beanstalk, Jack discovered that the giant had a numeration system all his own. When the giant began counting the golden eggs, Jack heard him count, "Fee, fie, foe, fum, fot, feefot, fiefot, foefot, fumfot, fotfot, feefotfot, . . . ". What word would the giant use to count the twenty-third egg?	4.
5. How many ounces of pure water would have to be added to a 30 ounce, 30% solution of alcohol to reduce the original alcohol concentration of the solution to 25%?	5.
6. Greeting cards cost \$2.50 for a box of 12, \$1.25 for a packet of 3, or 50 cents each. What is the greatest number of cards that you can purchase if you have \$14.90? (Do not consider sales tax.)	6.
7. Nikki noticed that if she stacked her dollar bills in stacks of 6, she had 3 left over. If she made stacks of 8, she had 7 left over, and if she made stacks of 5, she had 4 left over. If it is known that she had less than \$100, how many bills would be left over if she made stacks of 7?	7.

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December 8, 2011

AMERICAN SCHOLASTIC MATHEMATICS ASSOCIATION
JR/INTER SCHOOL DIVISION
CONTEST #3

NAME _____ SCHOOL _____

QUESTIONS

ANSWERS

1. Two thieves stole a car from some campers. They drove a very bumpy road at a speed of 14 miles per hour. After 28 miles, they stopped. They had punctured the gas tank and left a trail that started at the camp fire at the camp site. The trail caught fire as the thieves drove away and burned steadily at 12 miles per hour. How long, in minutes, was it before the thieves were surprised by the fire?	1.
2. Express in terms of a rational number, the value of $\frac{1}{2 - \frac{1}{2 - \frac{1}{2 - \frac{1}{2}}}}$	2.
3. Three children played a game; two won and one lost on each play. The loser had to double the points of each winner by subtracting from his or her own points. They played the game three times and each child won twice and lost once. At the end, each had forty points. How many points did each child have at the beginning?	3.
4. George Greenthumb wants to buy 100 plants for exactly \$100.00. How many plants at \$0.95 each and at \$1.15 each, does George need to buy?	4.
5. If 55% of the lambs born are male and 90% of the male lambs survive the first year, what is the fewest number of lambs that must be born in a year to have at least 100 males living at the end of the first year?	5.
6. If $3 \# 7 = 1$, $4 \# 2 = 2$, and $9 \# 15 = 3$, what is $6 \# 6$?	6.
7. The points (2, 3) and (5, 1) are reflected over the y-axis in the coordinate plane. What is the area of the quadrilateral whose vertices are the points and their images?	7.

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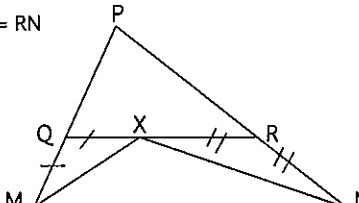
January 12, 2012

AMERICAN SCHOLASTIC MATHEMATICS ASSOCIATION
JR/INTER SCHOOL DIVISION
CONTEST #4

NAME _____ SCHOOL _____

QUESTIONS

ANSWERS

1. Find the two numbers between $\frac{2}{3}$ and $1\frac{7}{15}$ such that when the four numbers are arranged in order of magnitude, the differences between any two consecutive numbers will be the same.	1.
2. Mr. Pennypacker left half of his estate to his wife; \$40000 to his daughter Mrs. Greenback; half of what remained to his butler Mr. Bill; half of what remained for the care of his dog Nickel, and the remaining \$6000 to his favorite charity. What was the value in dollars of Pennypacker's estate?	2.
3. What is the perimeter of $\triangle PQR$ if $PM = 10$, $MN = 15$, $PN = 17$? $MQ = QX$ and $XR = RN$  <p>(Not drawn to scale)</p>	3.
4. Find the smallest product one could obtain by multiplying exactly two numbers from the set $\{-7, -5, -1, 1, 3\}$	4.
5. Raul bought his stereo in a city where the sales tax is 5.5%. He paid \$410.40 for it, including tax. How much money in dollars could he have saved if he had bought the same stereo in a neighboring city that collects 4% sales tax?	5.
6. Three cards are selected randomly from a standard deck of 52 playing cards and placed in exactly the following positions: A queen is just below a queen. A jack is just above a queen. A spade is just above a spade. A heart is just below a spade. From these clues, name the three cards including the suit of each card (in any order).	6.
7. Points A, B, C, and D lie on the same line, from left to right respectively. If $AB:AC = 1:3$ and $BC:CD = 4:1$, calculate the ratio $AB:CD$.	7.

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February 9, 2012

AMERICAN SCHOLASTIC MATHEMATICS ASSOCIATION
JR/INTER SCHOOL DIVISION
CONTEST #5

NAME _____ SCHOOL _____

QUESTIONS

ANSWERS

1. Albert Einstein was once asked what subjects his students studied. He replied "Half of them study only mathematics, one-third of them study only history, one-seventh of them study only chemistry and there are 20 students who don't study at all. " How many students did he have?	1.
2. Twice the length of the shorter side of a parallelogram exceeds the length of the longer side by 5 inches; one third the sum of the shorter side and 9 exceeds one-fifth the longer side by 3. Find the two distinct lengths of the sides of the parallelogram.	2.
3. Two clocks both show eight o'clock. One clock gains one minute each hour. The other clock loses one minute each hour. In how many hours will both clocks again show identical times?	3.
4. The planet of Vulcan conducts maneuvers using all of its spaceships, each of which uses the same amount of fuel. The ships use 287 units of fuel one day and 492 units of fuel the next day. How many spaceships does Vulcan have in the maneuvers?	4.
5. What is the arithmetic mean of the first ten prime numbers? (Express answer as a decimal.)	5.
6. One invention saves 30% on fuel; a second saves 45%; a third saves 25%. If you use all these at once, how much fuel can you save?	6.
7. Three friends, Ann, Bill and Carol, put their money together to purchase lottery tickets. They each purchased part of the lottery tickets the following way: Ann put in \$20; Bill put in \$25; and Carol put in \$35. One of the tickets they bought was the winning ticket. They won \$4.8 million dollars! How many dollars was Bill's share if the winnings were divided in the same proportion as the original money was contributed?	7.

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March 8, 2012

AMERICAN SCHOLASTIC MATHEMATICS ASSOCIATION
JR/INTER SCHOOL DIVISION
CONTEST #6

NAME _____ SCHOOL _____

QUESTIONS

ANSWERS

1. The official American flag length-width ratio is 1.9:1. If a flag is 26 meters long, what is the width in meters of one stripe? Remember that there are 13 stripes on the American flag. (Round answer to nearest hundredth.)	1.
2. A flight attendant needs to wear a different outfit every day. She has three times as many blouses as slacks and twice as many scarves as blouses. How many blouses must she own to be able to wear a different outfit every day for three years?	2.
3. Bob has exactly \$2 in nickels (five cent coins), dimes (ten-cent coins) and quarters (twenty-five cent coins). If he has the same number of each type of coin, how many of each type does he have?	3.
4. The value of a machine declines by 10% for each year of use. If the original cost of the machine was \$5000, after a minimum of how many full years will its value be less than 50% of its original value?	4.
5. The numerator of a certain fraction is 3 less than the denominator. If the numerator is tripled and the denominator is increased by 7, the value of the resulting fraction is $\frac{3}{2}$. Find the original fraction.	5.
6. A freight train one kilometer long enters and goes through a tunnel that is 1 kilometer long. If the train is travelling at a speed of 15 kilometers per hour, how long does it take the entire train to pass through the tunnel?	6.
7. Three vertices of a parallelogram are located at (1,1), (3,5) and (-1,4) in the coordinate plane. Find all coordinates of the fourth vertex. (All coordinates must be expressed as ordered pairs.)	7.

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Note: Since this is the last contest of the year, the adviser must make sure the cumulative score for each student is indicated on the scorecard so that we can issue the award for your highest scoring student.